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BUTCHER'S REPORTS IN OPERATIVE SURGERY.

Series the Eighth.

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CASE 2.—A FOURTH SUCCESSFUL CASE OF EXCISION OF THE KNEE JOINT; ALL THE FUNCTIONS OF THE LIMB FULLY PRESERVED, WITH THE EXCEPTION OF THE KNEE BEING RENDERED FIRM AND RIGID (*the perfection of cure*); NO DEFORMITY WHATEVER.

CASE 3.—SUCCESSFUL EXCISION OF THE ENTIRE UPPER JAW AND PALATE BONE, FOR AN ENORMOUS FIBRO-VASCULAR TUMOUR; TERRIFIC INTERMEDIARY HEMORRHAGE; LIGATION OF THE INTERNAL MAXILLARY ARTERY; DIGITAL COMPRESSION KEPT UP CONTINUOUSLY, NIGHT AND DAY, FOR FIFTY-EIGHT HOURS, UPON UNUSUAL NUTRIENT VESSELS; PERFECT RECOVERY.

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CASE 5.—A MOST UNUSUAL AND HIDEOUS FORM OF DOUBLE HARE-LIP, COMPLICATED WITH DOUBLE-FISSURED PALATE; ENORMOUSLY DEVELOPED SEPTUM AND INTER-MAXILLARY PROJECTION, ALL FUSED INTO A SHAPELESS MASS; OPERATION; RECOVERY, WITH SCARCELY ANY DEFORMITY.



*With Mr Broderick
Comptaining.*

R E P O R T S

IN

O P E R A T I V E S U R G E R Y.

Serics the Eighth.

BY

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ETC., ETC.

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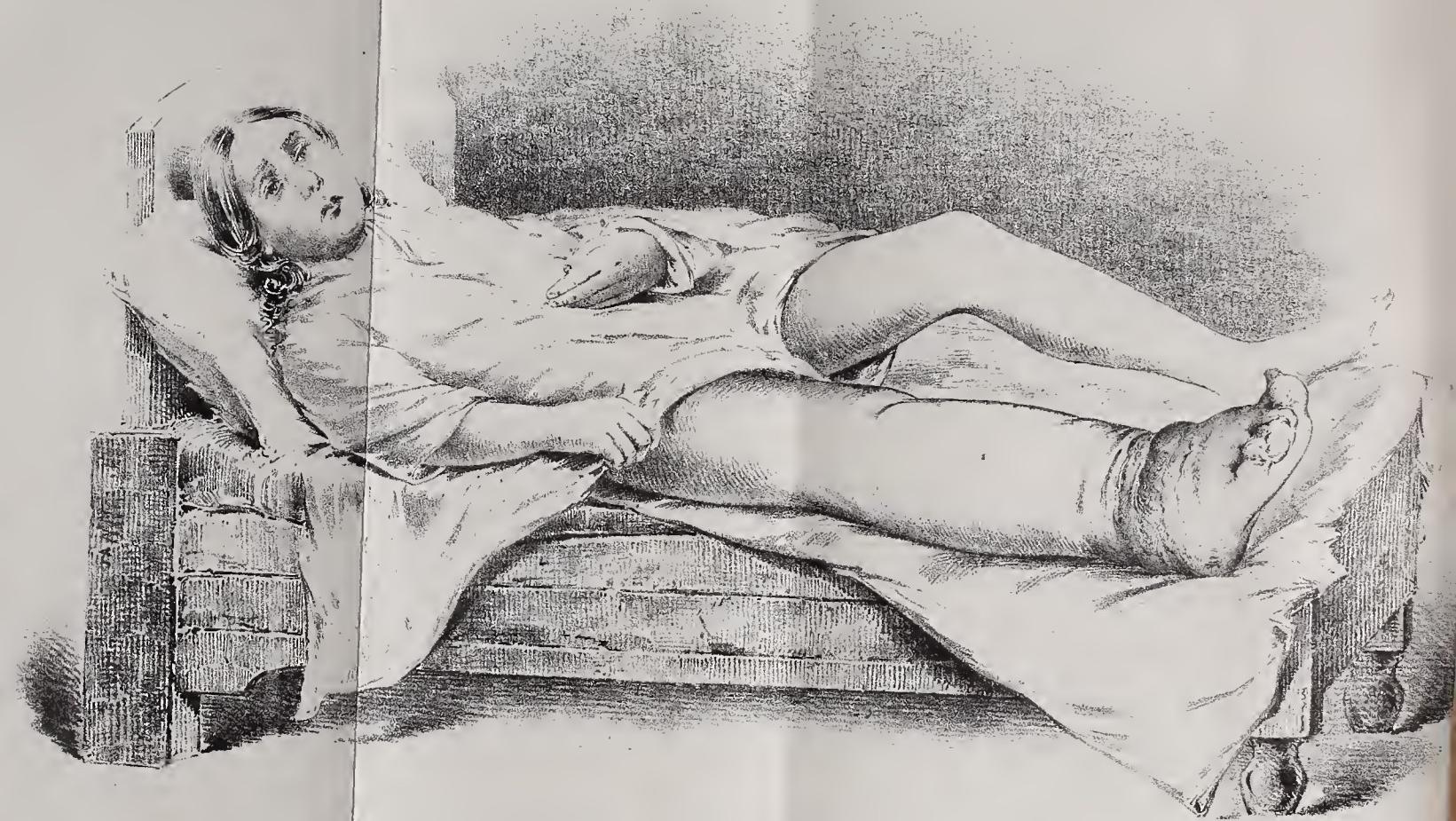
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PLATE I





REPORTS

IN

OPERATIVE SURGERY.

THE present paper, in continuation of my "Reports in Operative Surgery," contains, I conceive, a few of the most interesting cases that could, by possibility, be submitted to the profession; and because so, according to my judgment, I have selected them from amongst many abounding in difficulties.

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CASE I.—*Elephantiasis Arabum, affecting the Lower Extremity, Successfully Treated by Ligature of the Femoral Artery.*

The disease, elephantiasis arabum, though being a rare and unusual affection in these climates, yet occasionally presents itself as attacking the vulva, the scrotum, and more frequently, the inferior extremities. At the same time, I do not wish to convey that it is confined in its localization to these particular parts of the body. I met with it, years ago, in a well-developed form, affecting the hand of a young woman; and of this remarkable case I have a fine cast in my collection. At present I shall confine my observations to the disease, as affecting the lower extremity.

Not unfrequently the affected person solicits the aid of the operating surgeon when all medicinal agents and applications have failed to restore the limb to usefulness; or, later again, when they prove inert, totally abortive, valueless in alleviating pain or procuring repose. Pathological inquiry unveils the progressive disorganization, in extreme cases, of the bones, as well as of the soft parts, and the manifest alteration in their vessels of supply. Yet here the exposition stops; there has been, to the present time, no revelation of the mysterious influences which bring them about—that wrought them.

The person afflicted with this intractable malady, finding no mitigation of pain, appeals at last, I say, to the operating surgeon for the removal of the limb; and such a demand has, necessarily, in many cases, been complied with. Yet this extreme resort has proved itself not always successful, the disease returning on some other member with all its original inveteracy and obstinacy. Great credit is due to the judgment and skill of Professor Carnochan, of New York, who devised a successful treatment for this complaint—even the bold step of ligaturing the main artery of the limb.

The following case gives a faithful picture of the disease, as well as of the application of this new operation—ligaturing the femoral artery—with a view to modifying the morbid nutrition of the limb, now, for the first time, performed in either this country, England, or Scotland:—

Margaret D., aged 44 years, admitted to Mercer's Hospital, Nov. 6th, 1861, suffering, in a most pitiable way, from elephantiasis of the right lower extremity. During the last 18 years she has been, in a mitigated or increased degree, labouring more or less under this affection. Years ago, even before the above date, the limb imperceptibly, at least unperceivedly, became "weighty," "dull in its movements," and quickly tired on exertion. Months passed over without any marked symptoms appearing to create alarm or distress. However, about the time noted above, a change became so manifest, evidenced by a gnawing, dull aching in the part—persistent, unchangeable, unalterable, day or night—that willingly she sought advice. Various means had been tried to check the increasing size of the foot particularly, for here, first, the increase of volume was perceptible and marked—changes that, in a short time, were propagated to the leg. Gradually and steadily, for years, accessions of engorgements had taken place. Over and over again depositions, it would appear of new material, had been superadded, with only occasional periods of repose. Compelled thus, I would say, she inquired and sought after relief; and though some of the expedients adopted had been felt to temporarily arrest the morbid degeneration, and the painful augmentation of bulk, and thus for a time afford comparative relief, yet never was the part seized on by active plethora without its traces and evil consequences—additional deposits—testifying to its having been there. Thus, year after year of suffering and confinement passed by, relief only being experienced sometimes, and in a slight form; and she

had to endure privations, more or less, from inability to follow her occupation as a laundress with steadiness and certainty.

Over and over again she sought relief both from private and hospital resources; but the best directed efforts were only palliative, and that as long only as perfect rest, quietude, and repose were adhered to in the recumbent posture; and these restrictions were incompatible with her mode of life—her means of subsistence. A few hours walking about would reproduce an excess of swelling and exacerbation of pain, with all the bursting engorgement, that it took weeks to partially disperse, as I have myself witnessed. Several times she solicited the removal of the limb, so great a burden had it become.

On her admission to Mercer's Hospital, her condition was most painful to witness—her case truly pitiful. Neither by day or night could she obtain sleep or rest, owing to "the terrible pain in her leg and foot;" and certainly the limb presented a most serious aspect, engorged to that extent with bright arterial vascularity in parts, that might have been supposed to threaten its vitality by excess of action—conditions most manifest about the calf and two upper thirds of the leg. The foot exhibited a more subdued colouration; yet, over all, pressure was inconvenient, in many parts painful, in some intolerable. Again, the discoloured part above was tense, polished; while about the ankle, the integuments presented large, elevated, thick-set welts and nodules, covered with an irregularly projecting scaly coating, almost resembling patches of ichthyosis. The dorsum of the foot and outer ankle were particularly marked in this way, while deep sulci crossed the anterior aspect of the ankle, which was devoid altogether of such an arrangement of tegumentary membrane, being smooth, pinkish in shade, and, as it were, bound down or matted to the anterior annular ligament, while the elongated masses of the pendulous integument of the leg above, overhanging these deep sulci, and of the dorsum of the foot, inferiorly were rugous in the extreme, and discoloured with a brownish hue. Owing to the repeated attacks of engorgement, the toes at length suffered, and a very unhealthy form of ulceration settled on each, beginning at the outer side of the great toe, and seizing in turn on each of the other four, and steadily, though slowly, destroyed their extremities—that is, their normal, healthy structure; leaving in its stead a replacement of irregular granulated masses, highly sensitive and impoverished in consistence; and this marked the only effort at repair. Such condition added greatly to

the sufferings of the patient, as in this mutilated state every laboured effort at progression was made by the imposed weight directed on the heel. Altogether the limb was of large dimensions, as exemplified in the plate executed by Mr. Forster from a truthful drawing.—(See Plate I.) The following were the measurements of the diseased limb as contrasted with the sound one:—

	<i>Sound limb.</i>	<i>Diseased limb.</i>
Thigh, above knee, -	15½ inches,	17½ inches.
Calf of leg, -	14 ,,	19 ,,
Above the ankle, -	8 ,,	16½ ,,
Around arch and dorsum of foot, 10	,,	15½ ,,

Having carefully considered the hopelessness of any further attempts, either by medicinal agents internally, or as external applications, and the uselessness of pressure and bandages to reduce, even temporarily, the massive proportions of the disabled limb, and not wishing to comply with the repeated entreaties of the woman to remove it by amputation, I naturally considered the expediency of ligaturing the femoral artery. At the time that Professor Carnochan's valuable paper, "Contributions to Operative Surgery," came to my hand I was very forcibly struck with the originality of his proposal; and, from all that I was acquainted with as to the pathology of the affection, I saw no valid reason to dissent from his views, or refuse to accept the truthfulness of his statements as he propounded them to the profession.

On the morning of the 25th Nov., 1861, I prepared to operate after the following manner:—The patient was placed upon the operating table, in the horizontal position, on her back, and brought under the influence of chloroform. During its administration she was comparatively quiet, yet not so tranquillized as might have been desired during the steps of an operation surrounded with considerable difficulty, owing to several causes—the natural bulk of the limb from excess of fatty deposition, the additional increase of its volume from abnormal changes, and, as a sequence from both, the great depth of the artery from the surface. Other hindrances were likewise foreseen, as shall presently be detailed. But to proceed with the operation. The thigh was very slightly flexed, and rotated outwards, and steadied so by assistants, above and below; the knife was first laid on its edge, applied about an inch and three quarters below Poupart's ligament, and at a point midway between the spine of the ilium and the crest of the pubes. This was selected as the

proper position—that in which the vessel might be found, for no pulsation marked its course, it lay so deep and buried; the artery could only be even imperfectly felt passing over the pubes, for it there seemed to recede so suddenly from the surface, deep down into the limb, that no information or assistance as to its course could be derived from the heart's impulse transmitted to its walls. From the point mentioned, then, the knife was carried downwards in the axis of the limb for fully five, nearer to six, inches, being rather over the external wall of the vessel—my object being to keep out from the saphena vein, which was very large and somewhat outside its usual position. The first stroke of the knife opened a wound to the extent mentioned, and, through the integuments, fat, and superficial fascia; the depth of adipose tissue was fully an inch and a half. A small opening was next made in the fascia lata of the thigh, a director passed beneath it from below upwards, and so it was divided throughout the entire extent of the wound, the knife traversing the groove of the director rapidly. At once the inner edge of the sartorius muscle came into view, as also a portion of the sheath of the vessels; the internal edge of this muscle was gently drawn outwards, and retained so by a retractor, while the opposite side of the wound was similarly held apart, and in the contrary direction. At the lower part of the wound, where the sartorius was crossing the vessels, the sheath was carefully raised up with a forceps, and a small opening made into it with the knife held horizontally, and its flat surface towards the vessels; the sheath was then slit to about half an inch, and instantly the femoral vein, filled with dark blood, was thrust up owing to its engorged state, rolling itself, as it were, over the arterial trunk, and projecting through the opening in the sheath.

The transposition this brought about demanded the greatest caution as to the method of procedure. I carefully passed a director between the vein and anterior wall of the sheath, and slit it to the extent of half an inch more; no turning off or unfolding of the sheath was had recourse to; this simple division released the artery in front; no meddlesome interference disturbed it in its bed, either vertically or behind, and the great advantage was gained of relaxation of the constriction apparently exerted on the protruded vein, and a facility was allowed for examining the condition of the artery and its relationship to the parts accompanying it. The enormously increased size of both vessels was now apparent. The vein, fully an inch in width, was gently lifted off the artery, and carefully

pressed downwards, backwards, and inwards, while the internal edge of the wound was held in a like direction; this arrangement brought into view, resting on the artery, the saphenus nerve, which was drawn outwards, together with the external edge of the wound. Thus the artery was exposed, and its appearance was by no means encouraging; it was of unusual dimensions, fully twice its natural size, if not greater; it was more flaccid and considerably paler than the artery when exposed in this region under the ordinary circumstances demanding its ligature; in other words, the artery presented more the appearance vessels of the same magnitude assume in the lower animals, as in the horse and the cow, than that met with in the human subject. Having thus proceeded, the next and difficult point was to pass the aneurism needle between the vein and artery without wounding the former. In ordinary cases this can be effected securely enough. In some cases of popliteal aneurism an unnatural intimacy is established between these two vessels, even so high up as the site under our immediate consideration; and I shall not pass on without mentioning the name of the enunciator of this practical fact, my deeply esteemed and most distinguished friend, the late Professor Porter. The intimate connexion, I repeat, between the vein and artery is, in some of those instances, so decided as seriously to endanger the integrity of the weaker vessel on the attempt being made to ligature the artery. I have seen the vein wounded in the attempt being made to pass the ligature round the artery, and suppurative phlebitis, as a consequence, destroying, in a short time, the life of the individual. In another instance I have seen the vein pricked with the needle; blood gush up rapidly, which was restrained until the artery was securely tied; compresses then carefully retained over the point of the bleeding vein; mercury administered quickly; salivation produced, and no ill consequences follow. The intimacy of the cohesion between the vein and artery in this region should never be lost sight of or under-estimated by the operating surgeon; for, in some instances, unless the aneurism needle be used with gentle, yet steady force, in the proper curve of the artery, it will go astray, and in preference, wound the coats of the vein so that the instrument may readily pass into and conduct the ligature through this vessel, thus transfixing it; and, when the cord is tied, the anterior wall of the vein is included in the noose with the artery, and strangled with it, occasioning inflammation of its lining membranes, diffuse in its character, progressive in its consequences, fatal in its result.

There is a beautiful preparation in the pathological department of the Museum of the College of Surgeons illustrating this fact. The preparation is marked B. c. 276 (Organs of Circulation), and was placed there by the late Mr. Rumley. He operated upon this case, tying the femoral artery for popliteal aneurism in Scarpa's space, and unfortunately wounded the vein and included a part of it in the noose with the artery, producing well marked symptoms of phlebitis, which quickly carried off the patient. Great praise is due to Mr. Rumley for depositing this invaluable preparation in the college as a beacon to warn others of the danger. And many will, I am sure, remember how earnestly he dwelt upon this case when examining upon the subject of the treatment of popliteal aneurism by ligature, when Chairman of the Court of Examiners of the Royal College of Surgeons in Ireland.

Having made this digression without, I am confident, diminishing or detracting from the practical utility of the case, I shall now dwell upon the manipulation I had recourse to for the safe guidance of the ligature under the extreme difficulties met with in the remarkable example I am detailing. The lips of the wound being steadily held apart, by retractors in the hands of assistants, the vein was pressed inwards and backwards, together with the internal side of the divided sheath, and fixed so by the index finger of my own left hand. Marking well the line of junction of the vessels, the knife was lightly and gently drawn vertically upon it, so as merely to divide the most anterior connecting shreds—and this only for about a quarter of an inch, just to permit the point of the aneurism needle to be fairly laid between the coats of the artery and that of the vein. The right hand, considerably depressed, holding the needle, permitted its curve to lie first over the anterior wall of the artery, its point resting on the prepared space for it just mentioned. The handle of the instrument being then gently elevated, and gradually yet steadily brought forward, while all along a force was communicated to the instrument, pressing its point deeper, at the same time in a semicircular way, well up to the artery; all the time in this movement an up and down motion in the axis of the vessel was employed, the more gradually to insinuate the point as it progressed round the vessel; and so the instrument was safely made to appear on its external side, with a shred of fibrous membrane over it—which, being divided by a touch of the knife, left its eye exposed for the ligature. A firm well-rolled waxed silk ligature was passed through it, and then the

instrument withdrawn, conducting, by this backward movement, the cord safely beneath the artery. The strain of the retractors being taken off, and all the parts moderately relaxed—the artery entirely so—the ligature was tied, and resolutely so, in order that the internal coats of the vessel might be fairly divided. The first tension on the cord was not hastily made; a little dexterous manipulation was employed to ward off—to deliver the artery from being corrugated in the constriction, owing to its inordinate size. So far the difficulties were overcome—the integrity of the vein unharmed; the artery tied so as to secure division of its coats with but little disturbance of it in its natural bed. One end of the ligature was now cut away, and the other brought directly through the wound, the lips of which were accurately laid in apposition, and retained so by six points of wire suture, between each of which a long strip of adhesive plaster was placed, and effectually supported three-fourths of the circumference of the limb, thus securing the maintenance of contact throughout the entire depth of the wound. The foot and leg beyond the knee were equally rolled with a flannel bandage, so as to yield the gentlest pressure, and to afford heat, or guard against its abstraction. The patient quickly rallied from the chloroform, and was then carefully conveyed into one of the small wards adjoining the operating theatre, and placed in a bed, comfortably heated. The limb was slightly flexed, and gently rotated partially outwards, and supported and sustained evenly, on all sides, in this attitude, by soft pillows.

In an hour after the operation the limb fell remarkably in temperature, and a good deal of pain was complained of about the knee and ham, when, in addition to the flannel bandage, the limb was wrapped up in cotton wadding, and heated jars placed along its sides, and also to the sole of the foot; a large opiate, with wine, was given, and repeated in two hours.

4 o'clock, p.m.—Heat perfectly restored throughout the limb, from one extremity of it to the other, and the pain considerably diminished. The patient had some sleep at intervals. Opiate and wine repeated.

9, p.m.—Heat of limb considerably increased, so removed the entire of the cotton wadding, leaving the toes only covered by it. The patient now free from all pain. The opiate to be repeated twice in the night.

Nov. 26th.—Slept occasionally through the night. Pulse 98; steady in its beat. Complains of some nervous pains about the knee

and ham; no tenderness in the wound, which looks most satisfactory. She referred some spasmoid pains to the abdomen, such as she was frequently in the habit of experiencing before the operation. Now, as formerly, they yielded to very hot turpentine stups.

On stripping the limb, it was observed by all the students how warm and natural was its temperature; and when tested by the thermometer it proved equal to the sound one, while the most striking characteristic of all was evidenced in the diminution of its bulk, the integuments in some places being absolutely flaccid. I again carefully rolled the foot and leg with a flannel bandage, to above the knee, gently and with a very equable support, then rested it throughout upon the pillows as before, slightly flexed at the knee, and somewhat rotated outwards. The opiates to be continued through the day.

4, p.m.—Going on most favourably, the nervous pains sometimes absent altogether. Expresses herself as deriving the greatest comfort from the increased pressure effected by the readjustment of the bandage. Temperature of the limb excellent.

9, p.m.—No pain, and inclined to sleep quietly.

Nov. 27th.—Slept for lengthened periods uninterruptedly; no pain of any amount. Bandage slackened; yet I did not wish to disturb the limb, even by lifting it, so soon again, for fear of interfering with or interrupting the reparative process in the wounded artery. Opiates freely; four ounces of wine, and beef tea.

9, p.m.—Has spent a quiet day; scarcely any nervous pain.

Nov. 28th.—Slept well; took some breakfast with appetite; limb free from pain. Readjusted the pillows. No tenderness or uneasiness about the wound; foot and leg preserving their natural temperature. To have beef tea, four ounces of wine, and full opiate at night.

Nov. 29th.—Slept well; pulse, 98. No pain in either wound or limb. Removed the bandage; limb reduced as to bulk in a most remarkable way, and its natural temperature perfect. Another very important change has been brought about—the absence of the acute sufferings which the patient experienced in the ulcerated and eaten-away toes. I dressed them to-day without pain, though hitherto she experienced the greatest agony on their being touched. New skin is forming in many parts, whilst in others cicatrization and healing is established—the excess of vascular action being removed, which, according to my views, killed and perished them, as parts die from excess of inflammation. To continue full opiate at night, four ounces of wine, beef tea, and bread.

Nov. 30th.—Complained of great sensitiveness and pain in the wound this morning. On examination, parts were reddish, and evidently pus pent up; so I clipped, with a scissors, the adhesive straps, and cut two of the wire sutures and withdrew them. Matter appeared at the centre of the incision. No undue pressure of any kind was exerted upon it, and the tender, sensitive wound was covered with a soft linseed-meal poultice, half-an-hour after which all pain dispersed. Took her food at the regular hours, as usual.

3, p.m.—Free from pain; opiate repeated.

Dec. 1st.—Pain absent during the entire night, and she slept quietly. The wound looks well, matter oozing up from the vicinity and around the ligature. All redness and puffiness gone. Temperature of the limb admirable. Poultice continued, and full opiates repeated every third hour, so as to quiet the whole system, and so act as a guard against hemorrhage.

Dec. 2nd.—No pain; wound suppurating; tenderness all gone; limb greatly diminished in bulk; wine, four ounces; beef tea; and full opiates every third hour; poultice still continued to the wound.

Dec. 3rd.—Wound suppurating kindly; to continue the opium.

Dec. 5th.—No pain whatever; wound flaccid; no redness; ligature lies quiet; limb gradually diminishing; and ulcers on the toes just healed.

Dec. 12th.—Wound all healed except where ligature comes out.

Dec. 15th.—Wound quite firmly united, except the immediate point where the ligature comes out. The cord has been most carefully protected, all through, lest any sudden drag or violence should be offered to it. The diminution of the bulk of the limb is still progressing in a very remarkable way.

Dec. 22nd.—A most striking change has taken place in the cuticular covering of the limb, all the scales have dropped off, leaving the skin smooth and even on the surface; the patient has now the power of moving the toes quite freely, and they, too, are greatly reduced in volume. Ligature still in its place, the slightest trace of purulent matter along its track; no attempt whatever made to hasten its detachment by that reprehensible practice of pulling gently upon it from time to time.

Dec. 26th.—I cannot express the satisfaction which I felt this day at finding the ligature safely cast off, and lying on the cicatrix, 31 days exactly after its application. Limb remarkably reduced since last adjustment of the bandage; applied one with greater firmness than before.

Dec 28th.—Wound all healed now, the track of the ligature being sealed up.

Jan. 6th.—Diminution, progressive of the limb; administered mercury so as slightly to bring the system under its influence, and had the limb freely anointed with iodide of lead and iodide of potash ointment; frictions with this application were had recourse to morning and evening, caution being observed that no breach of surface might be occasioned, yet at the same time pressure of a moderate and steady kind was insured, and the dressings so saturated with the compound that the absorbents were stimulated and assisted in their action as far as could be accomplished. For four months this treatment was energetically and strenuously carried out, and so likewise gradually absorption was promoted. Soon the motions of the ankle joint were moderately permitted; but as the great, massive, dense welts of morbid tissue, above and below the angle of flexure, were removed, so likewise the movements became more extensive, and, as time passed on, were at length gradually perfected. The motions of the great toe—which, together with the four others were locked, as it were quite removed from under control by the massive preponderance of new material—to a certain extent participated in the same marvellous change. I have qualified the amount of restoration; for two of them, the second and third toes had grown together, were matted into each other by early ulceration, granulated surfaces side by side, pressed closely to each other and cicatrized. However, the most important portion of this part of the foot, the great toe, became perfectly loosed—its actions perfect. At this time the patient regained full control over the motions of the foot, evidenced by complete flexion and extension, without the slightest pain. To so great an extent was the limb reduced, and so soft and pliable had the tegumentary covering become, that the tendons and muscles could be traced in their course, as they started out in action, when performing their movements; altogether the size of the limb was but little larger than its fellow. At the end of the sixth month the patient was able to walk well upon the limb, without pain or uneasiness; she expressed herself as feeling an indescribable relief from the burden which had so oppressed her for years. Though moving about and walking through the wards all day, no additional swelling followed, and never a return of pain. Shortly after this the patient left the hospital and resumed her occupation as a laundress; frequently since I have heard the most satisfactory reports as to her condition,

and the ability with which she is able to pursue her laborious business throughout the whole day, standing nearly the entire time, yet neither swelling, fatigue, or pain is occasioned by her doing so; the precautionary application of a bandage is never dispensed with. So far as the history now goes the case has, I would say, been eminently successful; as to the permanent nature of the cure, time has not yet sufficiently passed by so as to afford a practical answer.

CASE II.—A Fourth Successful Case of Excision of the Knee Joint; with the exception of the Knee being rendered Firm and Rigid (the Perfection of Cure), all the Functions of the Limb Fully Preserved; No Deformity whatever.

I have great pleasure in publishing this my fourth successful case of excision of the knee joint. It is a fine example of all that may be achieved. I have only operated upon the four cases; all have been equally successful, as the published records can testify. While I wish to direct the attention of the profession to this, the last, I claim my right to stigmatize the pusillanimous efforts of those who, knowing but little about the operation, strive, with an unworthy motive, to silence truth. I recently brought this most important subject before the Surgical Society of Ireland. It will be seen by a reference to the *Medical Press* (February 11th, 1863), how significantly the opinions of all those practical hospital surgeons who spoke harmonized in their approbation of the theme, and, according to the definite bearings laid down to a demonstration, lauded and upheld the propriety of the measure. Such an approbation, emanating from such an ordeal, should be quite sufficient, in my mind, to calm the sceptical. If the mariner errs from the track laid down, marked in difficult shoals, by his obstinacy or incapacity for decision, the fault does not rest with him who has buoyed the path. I regret deeply that time does not permit me now to complete some strictures, and severe ones, too, which I am engaged in drawing up upon the cases which have been published, and the tables derived from false data, upon this most important operation. It seems abundantly clear, from the facts collected by Dr. Hodges, as well as from the practice of Langenbeck, that the operation has been far too confidently adopted, and that the great proportion of its failures arises from operating on diseases or on patients unfitted for its use.

What can we say of resections for malignant disease (Langenbeck, table No. 183)? Surely such operations as excision of the knee

for malignant disease of the patella can have but one issue; yet in Langenbeck's table several excisions are mentioned as having been undertaken on account of tumours, which are either examples stated to have been malignant, or which in all probability were so; of resections performed on children four years of age, who die of caries of the spine before the wound has had time to heal (*Ibid*, No. 188); of resections undertaken for acute abscess of the joint when pyemia had already commenced (*Ibid*, No. 184). Except that, notwithstanding the reputation and authority of the surgeon in whose practice they occurred, they are merely examples of what ought to be avoided, and of a style of operating which tends to retard the science, the art, and the progress of surgery.

Joseph Magher, aged 20, admitted to Mercer's Hospital, Feb. 14th, 1862, with incurable disease of the knee joint. A year and a half before the above date the man was suddenly seized with acute pain in the left knee joint, after a long and wearying walk. Next day he could scarcely move the leg upon the thigh, so sensitive and alive was the part to pain on the slightest disturbance. This state continued for more than a week; but ultimately abated by rest and confinement to bed, by repeated application of leeches, and constant stuping of the part. At length, at the expiration of nearly four weeks, the man was enabled to go about, making very imperfect use of the limb, marked by a considerable halt and unsteadiness in progression. From this time, consecutively, at intervals of a few days, up to four weeks before his coming under my charge, he was repeatedly compelled to yield, and give the limb rest. At the latter date he became perfectly invalidated, incapable of placing the leg under him at all, and subjected to the most wearying, gnawing pain in the joint; and now all his sufferings became gradually augmented: the joint became more swollen, more discoloured, and more sensitive to increased agony on the slightest touch. Consonant with these local annoyances were the constitutional disturbances evoked—fever developed in its most marked and typified form. I shall endeavour to describe briefly the local and constitutional changes manifested when he was received into hospital. I saw the patient lying in bed; and on stripping down the clothes the serious nature of the disease was remarkably portrayed—the thigh and leg were thinned and emaciated, while the normal configuration of the knee joint was altered altogether. Above the knee and in its lateral boundaries the increased dimensions were most marked, dependent upon two

causes—owing to enormous effusion of pus and serum within the joint, and throughout the entire extent of the great bursal structure beneath the extensors. Thus the lower end of the thigh was rendered most conspicuously prominent, while the internal wall of the joint was very defined and sharp, depending upon morbid alterations effected in the internal condyle of the femur and the corresponding articular surface of the tibia. The limb was flexed, the leg upon the thigh, the patient resting towards the left or affected side; the knee and leg well propped up, supported by pillows, while, to steady the foot below, the right one lay, as it were, acting the part of a cushion under it. The integuments over the entire joint were discoloured in the extreme, being of a purple livid hue along the internal surface of the joint, and above and below for several inches. The slightest weight upon the part caused the greatest suffering. The lightest manipulation was at once resented by spasms of the limb and screams from the patient. The gentlest movement of the patella backwards, or of the leg upwards against the femur, seemed to evoke them in the most formidable way. The whole line of junction, corresponding to the articular surfaces of the femur and tibia, when brought in apposition, was easily tracked out by the point of the finger gently passed along, though concealed deep beneath the external depositions and effusions already adverted to as distorting the natural configuration of the joint.

From this examination it was quite apparent that thickening of the synovial membrane—chronic changes which had been slowly, steadily going on—had now reached their maximum; that the cartilages of incrustation, both of the tibia and of the femur, had likewise been attacked, and had perished extensively—nay, more, that even the bones were implicated, and had become accessory to the fearful suffering and constitutional derangement. So violent was this constitutional sympathy, attendant on the rapid disintegration of parts, that life was seriously threatened. The patient had no sleep, day or night, nor did he even by the use of opiates doze for awhile. The limb was convulsed, and jerked from the bed with agonizing pain. The apprehension of this terror made him vigilantly guard and struggle against repose when the pain was mitigated or subdued in its character, for at intervals there would be short respites; sleep might be had were it not for the certainty of this formidable intruder. The countenance of the patient bore testimony to his sufferings. He had an affrighted look from over watchfulness; his eyes were bright, anxious, vigilant; the face thinned and flushed; the

hair dull, standing, matted from dried perspiration; the whole body emaciated, fingers appearing elongated, transparent; respiration short, rapid; pulse, 130, small, weak; speech quick, irritable. Before the patient came to hospital the sweats were profuse, night after night, and constantly alternated with diarrhea. The same distressing elements of hectic were as fully manifested after his admission. The most careful examination of the chest was made, and no deposition or impaired structure could be discovered in the lungs. The same rigid inquiry was likewise applied to other vital organs and to other cavities. After a most painstaking investigation the conclusion I arrived at was, that the fearful irritation, the destroying fever, was occasioned by the diseased joint, disintegrated throughout; and experience pointed now to operative surgery as the only means by which to rid the system of its source of pollution. After the most minute examination of the part, I came to the conclusion that the case was well adapted for excision of the joint. The bones did not seem extensively engaged beyond their articular surfaces; and, though I had no doubt of the total disintegration of the articular surfaces, yet there was no distant enlargement to lead to the inference that amputation should be had recourse to. This was my own firm conviction, and I decided upon excision; and on the 19th of February, 1862, I operated according to my usual custom, and after the following manner:—

The patient, supported by students in the horizontal posture, was brought into the operating theatre; the limb steadied at its angle of flexure on a long piece of board, to guard against the least shaking of it—the same which he had used on his removal from the country. I lay stress upon this mode of management, as confirmatory of the disorganized condition of the joint, which could scarcely bear the least tremulous motion even, without eliciting pain of the most acute character. Chloroform was now used with its most perfect effect—calm, total insensibility.

Standing on the left side of the patient, I divided the soft parts by a bold deep stroke of a heavy scalpel. The wound commenced below, over the head of the tibia, and was carried directly upwards for five inches, laying freely open the inner wall of the joint. An incision, similar in extent, commencing over the head of the fibula, was carried upwards through the outer wall of the joint; the two were then connected by a transverse cut below the patella; this at once laid freely and fairly open the joint; the superior flap was dissected upwards; then flexion of the limb was forced, to put the

fibrous structures externally and within the joint fully on the stretch, and so facilitate their more ready division. The former included shreds of the lateral ligaments, and spread out fibres of the involucrum, whilst the latter embraced the crucial ligaments which had only partially perished, a limited destruction which will most satisfactorily account for the non-displacement of the articular surfaces of the tibia and femur from their rightful axis. The parts being thus divided, the lower flap was detached somewhat downwards, whilst the edge of the knife was kept very closely up to the posterior surface of the tibia and back of the condyles; the immediate connexion of parts were thus thoroughly freed from their adherence to the line beyond the articular surface on either bone; and this is all that is requisite, as then the finger will detach, by vigorous pressure, the soft parts from the bones to the required extent, in this their posterior aspect. By this simple manipulation the artery is not only secured from injury, but it remains undisturbed in its bed, and the popliteal space is not encroached upon or its anterior wall broken up. The extremities of the long bones being thus denuded to the required extent, I dissected out the patella from the upper flap; it was scarcely diseased—only to a very small extent; the margin of its cartilage was highly vascular, and its edges softened; but, independently altogether of its aberration from a healthy state, I removed it as a part useless to be kept. The extremities of the femur and tibia presented a very different condition; here the amount of disease was most marked; the cartilage over the condyles of the femur had nearly all perished, while that which remained hung in shreds; the osseous tissue was eaten away in some places to the depth of a quarter of an inch. The tibia presented a like disintegration of its articular surfaces; not only were the inter-articular cartilages altogether removed, but the cartilage of incrustation was eaten away to a great extent, there being no trace of that covering the external articular surface, while that covering the internal one was detached altogether, lifted up in the centre by sharp debris of bone—the bone subjacent being eaten away freely, and all depressions and cavities filled with a dark sanguineous fluid. I removed the exposed surface of the tibia by passing the blade of my own saw behind it, and cutting from behind forwards, removing a slice about half an inch in thickness; the proceeding was effected with great rapidity, and the section was all that could be desired; the bone was healthy, as revealed, and the surface smooth, and even as a die. In like manner, the section of

the end of the femur was made from behind forwards, the line of division passing about the eighth of an inch higher than the sulcus between the condyles; the edge of the fine saw being made to enter the bone exactly corresponding to where the soft parts were pressed back from it, a few cautious rapid movements of the instrument completed its separation. Thus, about an inch and a-half of the femur was removed; and in this was safely included all the bone that was diseased or implicated in the mischief. I shall here, again, impress the caution that was observed in the direction of the blade of the saw, so that when the femur was fairly extended in the horizontal position for adaptation to the tibia, the section might be perfectly vertical, so as to allow the most even adjustment—surface applied to surface throughout.

The cancellated texture divided by the saw was most healthy in character. I next clipped away, with strong curved scissors, masses of gelatinous material incorporated with the disorganized synovial membrane, and the extensive bursa beneath the extensor tendons, which likewise was deeply implicated, being thickened, discoloured, and vascular, and filled with fluid. So degenerated was all this tissue that I dissected the entire away. The bleeding was arrested by ligaturing four or five arteries. The limb was now brought, with facility, into the horizontal position, and it was astonishing how evenly and well the bones lay in apposition—throughout every point in contact. The anterior wound was brought together with four points of the silver suture, and the extremities of the lateral wounds, internal and external, were in the same manner approximated and retained together, while the centre of each was left free and gaping, to allow of the ready discharge of fluids. The limb, rigidly held, was then lifted from the table, and the box used by me for such purposes steadily slipped in; pads were so arranged that when the limb was let down its posterior surface was evenly supported throughout, the normal gentle curve of the ham being preserved; at the same time the heel elevated, pressed forwards, the entire member lying as straight as possible. The sides of the box were in turn elevated, the foot support put in to maintain the tibia pressed up to the femur, pads on either side so as to secure rest, to prevent wabbling. The anterior splint, the use of which in former papers I have laid so much stress upon, was then laid on, properly padded, the straps buckled round all, steadyng the entire as one piece, while the body-belt was thrown round the trunk and fastened, so as to keep the long arm of the splint close to the side, and by so doing ensure the security of the limb in its proper axis.

The patient rapidly rallied from the effects of the chloroform, and was conveyed, perfectly supported in the horizontal position, from the operating theatre, and placed in a comfortably heated bed. So efficiently did the anaesthetic act, that when the man awoke to consciousness he was astonished to hear that the operation had been performed, as he had not the least remembrance of pain.

A careful examination of the portions of bone removed confirmed, in a most striking way, the great accuracy of the diagnosis, and beautifully illustrated the total disintegration of the articular surfaces, with deep and wide-spread caries of the osseous tissue in numerous places, all indicative of incurable disease, and an efficient cause of the withering fever that threatened life.

Before proceeding with the history of the case, I must say a few words about this very valuable saw which holds my name, and is used by me in all resections and amputations. In a work recently published, entitled *A System of Surgery, Theoretical and Practical, in Treatises by various Authors*, I find allusion made to this most useful instrument, in a feeble, meagre article, forsooth, termed "Resection"—such a production, both in style and matter, as would place a second year's student last in his class. I perceive a review of the book in the *Dublin Medical Press* for February 18th; and I will allow the reviewer to condemn the ignorance and want of information displayed in an article which should at least yield the facts and directions laid down in every text-book, and recognized by all well-educated surgeons. The reviewer thus speaks:—"The chapter upon 'Excision of the Joints,' or, as we call it in Ireland, 'Resection,' is only remarkable for the suppression of everything Irish that has been done in this branch of operative surgery. Mr Butcher, who has been particularly prominent in resection operations, has had his name introduced only for the purpose of vilifying the saw recommended by him, which, says the author, 'is rather liable to bend, and the blade is apt to get loose;' though we find it difficult to understand how such can be the case if the saw be well manufactured, the blade properly screwed up, and the surgeon have learned how to run such an instrument lightly and evenly."—*Dublin Medical Press*, Feb. 18th, 1863, p. 170.

The objections urged against the saw are too contemptible for me to dwell upon. Its great advantages for the purposes of resection I have pointed out in my memoirs on the subject of excisions of joints. Every modern work on surgery, and surgeons who have worked in this department speak loudly in its praises. By a regulation of the

Army Board it must be in every case of instruments. Is not all this additional testimony in favour of my saw? Therefore I protest against incapacity robbing the instrument of its merits.

Again, when I brought the subject of resection of the knee joint, a few nights ago, under the notice of the Surgical Society of Ireland, the mode in which the bones were cut by this instrument was particularly adverted to by two surgeons well trained in the use of instruments. Mr. Smyly, surgeon to the Meath Hospital, thus expressed himself:—"He considered it was the introduction of this saw, by Mr. Butcher, and the cutting of the bones in the way in which he did, which were the means of reviving the operation. It was now, however, recognized; for which, he thought, they were also indebted to Mr. Butcher." And thus Mr. Stapleton, surgeon to Jervis-street and the Mater Misericordiæ Hospitals, gave his opinion:—"One thing seemed to him to conduce very much to the success of Mr. Butcher's operations, and that was the admirable way in which the bones were sawn."—*Dublin Medical Press*, February 11th, 1863.

4 o'clock, p.m.—Limb lying remarkably well; no startings, no pain; has had some sleep. Stomach a little nauseated, but quieted by warm punch and opium; has taken some beef tea. Ordered 15 drops of Battley's sedative every fourth hour.

10, p.m.—All sickness of stomach gone; has had some refreshing sleep.

February 20th, 9 a.m.—Had a comparatively good night; far quieter, he reports himself, and more free from pain than before the operation. All the startings in the limb have ceased; no sweat; pulse down 15 beats, being now only 110. Has taken breakfast, some tea and toast. Ordered beef tea and six ounces of wine through the day; and the opiate, as on yesterday, every fourth hour. The limb lies quite easy, and free from pain.

4, p.m.—Was summoned to see the patient at this hour, as much fluid, of a bloody colour, was escaping through the sides of the box. I carefully let down the sides, one after the other, and examined, cautiously, the wounds. A large quantity of serum, mixed with a trace of blood, poured out freely from the exterior surface, where the bursal structure was dissected away, and likewise down from beneath the lower flap; though the serous or watery escape was abundant, yet it was only tinged with blood, not calling for any more positive examination; reapplied the lateral pads, lifted again into place the sides of the box, and secured them by the buckled

straps, as before. During this examination, due precaution was taken to guard against the slightest disturbance of the limb, by gently pressing backwards the anterior splint, while an assistant maintained the leg, foot, and foot-board exactly in the same relationship to each other as they held previous to the sides of the box being let down. Opium continued.

February 21st.—The patient had an excellent night, much sleep, and, as he expresses himself, " relieved from a great load." The countenance is calm, soft, and evidently that of a person free from suffering. Has taken his breakfast with appetite; wounds dressed after the same order and management as on yesterday.

27th.—Sleeps and eats freely, with appetite; no pain complained of. Limb dressed, with the same cautious handling.

28th.—On this day removed the wire sutures binding the anterior flaps together. It was satisfactory to see that the intimacy of their union was perfect, and there was no discharge from beneath anterior extensive flap, and but little from the side wounds—that coming out quite healthy in character. Limb lying as straight as an arrow. Dressed as before, the side pads gently supporting the lateral parts forward, thus preventing the slightest tendency to pouching. Wine, six ounces by day, and the same quantity at night; eggs, beef tea, chicken, with opiate night and morning.

March 3rd.—Progressing most favourably. The same cautions in the daily dressing, letting down side splints alternately, &c.; and, as yet, the limb has never been raised from the box. To continue all kinds of nourishment.

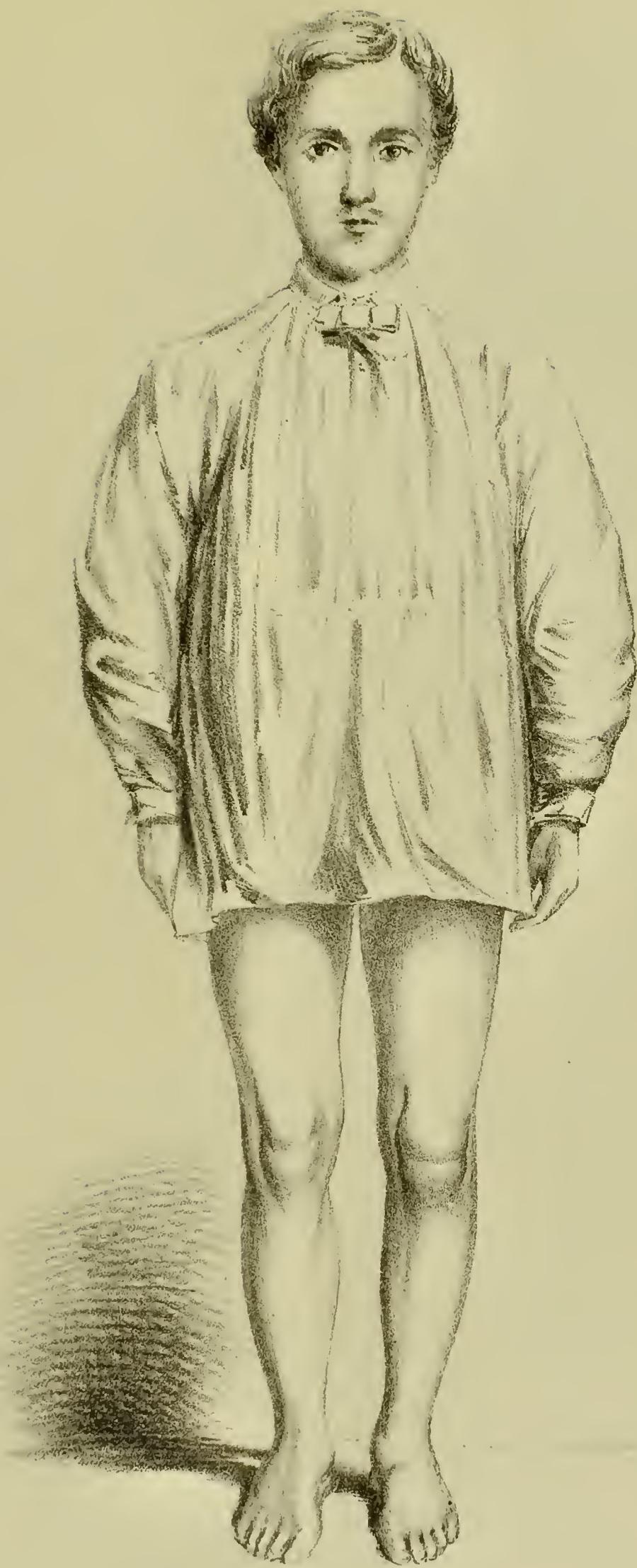
March 13th.—Patient's condition, in every way, most remarkably improved. Pulse 88; he sleeps well, eats abundantly, and with appetite; no sweats. He is visibly gaining flesh. Limb dressed daily; very little discharge, and that which flows quite healthy in character—the sides of the box being alternately let down, while pressure is duly kept upon the anterior splint. All ligatures away. The limb has not yet been raised from the box, though more than three weeks (three weeks on yesterday) have passed by; and by the great carefulness observed, the interior pad has not been unduly soiled or made offensive, so as to call for its disturbance. The patient removed to a fresh bed every second day, duly heated, prepared freshly for him, to secure against chills or cold.

March 17th.—Wounds very rapidly healing; external one nearly cicatrized. Suffers no pain in the wounded part or its vicinity. Eats and drinks with relish, and in abundant quantity. Pulse, 78.

March 27th.—It is now past five weeks by one day since the operation, and now, for the first time, the limb was raised from the box, and fresh pads placed beneath it. So quietly had it rested that there was not the least excoriation or irritability of the surface. The union between the bones seemed to have progressed in a most remarkable way, the bond of connexion being quite rigid and firm. At this time, likewise, all the constitutional disturbance had abated, a true evidence of the subsidence of all local irritation. Now, during the several months which the patient remained in hospital after this date, the same assiduous care was bestowed upon the limb, and so, likewise, the wounds healed gradually, the discharge diminishing. On two or three occasions the formation of small abscesses, that, after being opened and poulticed for a few days, healed up even more rapidly than the time which ushered in their appearance. Never did matter gravitate towards the ham, or indicate, even by premonitory effusions, a tendency in that direction, owing to, and I believe alone attributable to the lateral incisions being placed well back, particularly the external one, for the important reasons which I have already, in former papers, insisted upon with my whole voice.

During the treatment the patient had two attacks of erysipelas, contracted, as I believe, from cases in the ward; by proper management he was happily rescued from both. For many weeks (writing now, Nov., 1862,) he has been training himself to walk, of course by the aid of crutches. It is most remarkable the possession of motion and power over the extremity which the man possesses. He has full ability to flex and extend the thigh upon the pelvis, also the perfect motions of the ankle joint, and the full play of the muscles of the leg. The osseous union established at the site of the knee joint is, as it ought to be, perfectly rigid, not evincing the least tremulous motion—even when advantage is taken by force applied to the most distant extremities of the long bones implicated in the union. He is now a strong and vigorous young man, with the muscular system well developed, and fat freely deposited. His countenance bespeaks rude health, and there is a liveliness and contentment about him most remarkable when contrasted with the woe-begone and wretched-looking creature that he was prior to the resection of the joint.

The admirable likeness preserved in this paper, and drawn by the able hand of Mr. Connolly, faithfully represents his present state.—(See Plate 2). He has long since put aside the crutches, and can



MR BUTCHER ON EXCISION OF THE KNEE JOINT



now walk about without stick or support of any kind. When he is at rest and dressed, it would be impossible to perceive any shortening or the least deformity, nothing that the most scrutinizing eye could detect; and when naked (I refer the reader again to the picture) the proportions of symmetry are almost preserved—the axis of the limb is somewhat straighter than the sound one, the gradual inclination of the thigh bone inwards being, of course, not preserved. The foot rests upon the ground, and is as firmly planted as the sound one. The muscular development of the leg nearly equals that of the sound one, while the thigh, by measurement, is fully as large. The vertebral column has compensated for the shortening of the limb, the spine of the ilium being nearly two inches lower than that on the right side; yet the head and shoulders do not droop; there is manifested no change from their strictly normal or horizontal position. The man walks with great freedom from the hip, the motions of which joint are as perfect and as much under control as if the limb had not been rendered rigid at the centre. All the movements of the ankle joint and tarsus being sedulously preserved, contributes, in a very marked manner, towards facilitating progression.

CASE III.—Successful Excision of the Entire Upper Jaw and Palate Bone for an Enormous Fibro-vascular Tumour; Terrific Intermediary Hemorrhage; Ligature of the Internal Maxillary Artery; Digital Compression kept up Continuously, Night and Day, for Fifty-eight Hours, by relays of pupils, upon Unusual Nutrient Vessels; Perfect Recovery.

So far back as August, 1853, nearly 10 years ago, I wrote a long paper on excision of the upper jaw, in the pages of this Journal; and in it traced the history of the operation, and the various modes adopted, by surgeons of eminence, for its performance—illustrating my own views as to the best method of proceeding by my own practice. Again, in the number for May, 1860, I gave additional cases, where I only executed a very limited division of the soft parts, at the same time removing nearly the entire jaw bone. In the February number of the Journal for 1861, I was induced to again draw the attention of the profession to this operation—the time was just after Lizar's death; and I wished to offer to the memory of so great a surgeon—of him who originated this bold project—my tribute of homage and praise. Therefore, I selected from amongst the worst and most formidable cases that I had

operated upon, one presenting many points of interest and accumulated difficulties in its execution; and to it I appended many practical suggestions and details. The case was headed thus :—“Successful Extirpation of the Entire Upper Jaw and Malar Bone, for an Enormous Tumour Springing from the Former, Extensively Implicating Both, and Filling up the Parotid Region; Mode of Securing the Patient; Advantages of the Free Application of the Actual Cautery,” &c. In all these reports the most accurate lithographic drawings were printed to illustrate the cases, and are well worthy of repeated inspection, so as to convey a lasting impression of what had been done. The cases which I now detail are likewise pregnant with interest, and come in well as examples of the management of furious hemorrhage complicating the operation of excision of the upper jaw :—

Mary Sullivan, aged 80, admitted to Mercer's Hospital, Nov. 8th, 1861, with an enormous tumour, extending over nearly the entire side of the face. She stated that, about 22 months ago, severe pain fixed in the second molar tooth of the upper jaw, on the left side. This pain was more distressing by its constant dull character than from any sharp exacerbations; in a short time the pain extended to two or three more of the teeth, and then it was considered to be neuralgic. At the end of about two months, the teeth began to loosen, and were exceedingly painful when pressed upwards. Soon the anterior part of the bone was complained of, and in February the cheek was slightly swollen. About this time the pain entirely left the tumour; and, even up to the time of her admission, never came back. In about a month later (March) it was becoming apparent that the anterior wall of the maxilla was becoming prominent, as if yielding to some pressure from within. This was the first direction the tumour took in a marked way, and gradually it bulged more and more forward, at the same time encroaching, in a very marked way, upon the nose. For the last seven months, the tumour has increased with a steady determination; and the following was the patient's condition when received under my care :—The tumour certainly was most formidable in all its bearings—(see Plate 3, from a beautiful picture by Forster)—extending from the superior orbital ridge above, to the margin of the inferior maxilla below, and from the ramus and angle of the jaw to the mesial line of the nose. But, to be more particular, on examining the mouth, the anterior part of the palate



MR BUTCHER ON EXCISION OF THE UPPER JAW



plate of the superior maxilla, corresponding to the incisors, was firm and healthy; while that outside, and contiguous to the molar teeth, was depressed and softened. There was no projection of the growth backwards towards the pharynx, while the mesial line of the palate was not altered or encroached upon; here even the growth was disposed to take an anterior and outward direction, for, far external to the molar alveolar range, a large rounded mass projected and came down. The vascularity of the palate, or of the mucous membrane covering in this region, was not altered in intensity, while pressure and examination caused no suffering. The growth, which bulged outwards beyond the alveolar range, was hard, firm, and unyielding. The upward growth of the tumour was productive of much mischief; the floor of the orbit was raised from its bed, thrust up, partially removed by continued pressure, and the eye pressed upwards. The anterior and external development of the growth was most predominant—a tumour, as large as the two clenched fists, thrust out the cheek, superiorly passing above the eye and brow, occluding the eye, and dragging up the lower lid. Inferiorly, the growth passed on a line with the range of the body and angle of the inferior maxillary bone, while posteriorly it lay across the entire angle and ramus of the jaw, matted to, and incorporated with, the muscular tissue of this region. The tumour, in its backward direction, shot in between the maxillæ. The nasal process of the maxilla was thrust into the nostril, and the tumour, as it was opposed in its growth here, overlapped, externally, the left half of the nose. The surface of the tumour was irregular in the extreme, presenting numerous elevations and depressions—some hard, and as firm as bone—some yielding, crackling like parchment—some elastic, springy—others, fluid and undulating to the touch. On carefully examining its orbital connexions the greater part of the orbital plate of the maxillary bone was found to be removed, the orbital edge of the bone quite soft; and though the eye was thus encroached upon and covered in, the growth had not interfered with the power of vision—had not pressed upon its functional nerve. On forcing down the upper anterior prominent projection, with the lower lid expanded on it, the eye could be brought into view; it was clear, transparent, and competent to receive and appreciate impressions.

And now as to the covering of the tumour. It was tightened throughout, tense in the extreme, ulcerated in many points, to about the size of half-a-crown piece, just below the edge of the

orbit, and also over the most prominent part of the tumour; no fungoid granulations stopped the gap, as the wheyey pus flowed from it. The bulk and pressure of the tumour destroyed the integument. No doubt, the colouring of this growth, in many places, was characteristic of a malignant type; yet I have seen the same in tumours of magnitude, when no such characteristic ever was developed. The integuments, though thin, bright-coloured, permeated by innumerable vessels, yet were free, and could, by gentle manipulation, be made to move—to glide upon the projecting growth; they were not absolutely incorporated with its substance, being only matted just where ulceration had taken place, as already noticed.

The having carefully examined the chest, head, &c., of this old woman, and not being able to detect anything abnormal, constituted one of the grounds upon which an operation was justifiable. There was no evidence of the tumour being malignant *ab initio*—the absence of pain, particularly of any characterized form—the clear, transparent colour of the sclerotics, and the entire absence of any features of cancerous cachexia, pointed to such a conclusion. There was no marked emaciation; no discolouration of the skin, no haggard, anxious expression; on the contrary, the patient was free from pain, of a most lively disposition, never, as she said herself, “being a day sick.” She urged most warmly to have an operation performed, and felt a confidence that she would recover. Some considerations in the history and progress of the case, however, made me reflect most cautiously on the propriety of interference; and it was not until after deep deliberation that I consented to comply with the patient’s wishes, and to remove the part.

No time was lost, and the operation was performed on the 13th of May, according to the following method:—The patient was seated in a strong arm chair, with her head resting against the breast of an assistant. She was further secured by a stout piece of wood passed beneath the arms of the chair and across her thighs, so as to prevent any starting forwards. A sheet was cast around her arms and her body, and the ends delivered to assistants standing behind. *No chloroform administered.*

I commenced an incision from the junction of the malar with the frontal bone, and carried it downwards in a sweep over the projecting tumour; and, when near the angle of the mouth, and where the cheek was attacked, a greater force was *communicated* to the instrument, and it struck through, dividing in its progress forwards

the labial commissure. Pressure was made by the index finger of the assistant, standing behind, on the labial artery, just as it curved round the inferior maxilla. I then rapidly made an incision from the inner angle of the eye over that portion of the tumour resting on the nose, and, carrying it under the left nostril as far as the septum, cut the upper lip through vertically. I then dissected up this flap from the tumour; and having got all the mucous membrane freely divided from before backwards, and it, together with the flap, raised an inch or so by gentle dissection, the covering was further lifted off the tumour—nothing but a cellular connexion existing and a few fibrous shreds, which gave way before light touches of the knife. In this way the part was exposed up to the inferior orbital ridge and floor of the orbit, no difficulty being experienced in freeing the ulcerated opening. The lower flap was next dissected down from the growth. The zygomatic process of the malar bone was next cut partially through with a fine Luer's saw, and the connexion between the malar and external orbital process of the frontal deeply notched with the same instrument. The section of the bones was next completed, in both positions, with a strong forceps. I next introduced the forceps into the nostril, and cut through the alveolar ridge and palate plate of the maxilla on the left side of the septum; and next, with the forceps, cut through the connexion behind the ascending process of the superior maxillary bone and the frontal. I then cautiously freed the eye from all attachments with the maxillary bone; and this being completed, I seized the tumour and maxilla in a claw forceps, and bent the whole mass down to the mouth; then putting aside the instrument, and protecting the fingers with a towel, I seized the bone and morbid mass, loosened from its bed, and powerfully wrench'd it round and round till I broke through and tore up all posterior attachments. Some careful dissection had to be conducted behind and on the outside, where the growth insinuated itself backwards between the upper and lower jaws, and where also it passed external to the jaw, dipping in behind its angle; all, however, was set free, and the mass drawn out. A few ragged shreds had to be clipped off with scissors. The facial artery and a large tributary branch were ligatured, but no other vessel of importance seemed inclined to give blood; and warm sponges were thrust into the part to solicit any temporarily closed vessels to bleed.

During these several steps of the operation brandy was administered copiously, and well swallowed. When the surface was dry,

and not disposed to bleed, I applied the actual cautery very freely to all the deep parts, angles, and fissures, with the object—first, to seal up vessels permanently; secondly, to destroy any germs or roots of disease left behind; thirdly, to avert the accession of unhealthy forms of inflammation; all of which properties, I am convinced from observation, the instrument holds in a charmed way; and when writing on this subject before, my views were expressed as determinedly even as now, my enlarged experienced since only confirming their accuracy. There being no bleeding, I proceeded to dress the wound. I placed pieces of sponge, with a strong thread attached, and lint in like manner, into the irregularities beneath the eye and therabouts, which supported it perfectly in its berth; indeed I took the most sedulous care, when freeing the bone and tumour in its vicinity, that this important organ should not be disturbed in its lateral or superior attachments, detaching with the knife every shred beneath, so that any force applied to the tumour and the maxilla should not depress it. The flap was now brought down, and steadied in position by two points of twisted suture in the upper lip; two where the cheek was thick at the angle of the mouth, and a little beyond, and several points of wire suture along the nose and up the cheek; the parts lay admirably in position. Next, to keep out the cheek, I put other pieces of lint, rolled up and guarded with a strong silk thread, behind the cheek, so as to press it out. The threads I brought out (a novel mode) through the ulcerated hole, and fastened them by adhesive straps on the temple and forehead. This was an admirable arrangement to effect this object—the prevention of the flapping in of the otherwise unsupported soft parts.

The patient bore this severe operation wonderfully—and expressed gratitude at its being done; pulse good. She was carried back to the ward, and placed in a bed, comfortably heated and suitable to induce repose. In an hour and a-half after (11½ o'clock, a.m.) very rapid bleeding set in; fortunately I was in the hospital; so rapid was the flow that I feared to try any milder means than at once exposing the part. I drew out the needles, clipped the wire sutures, set free the flap, threw it up, turned out all lint pads, sponge, and clots, and saw a large artery spouting in the very deepest angle, far, far, back. I thrust a pointed cautery, properly heated, into the recess; but its application did not stay the bleeding; for a moment it seemed to have the desired effect, and to do so, but after a few additional seconds again the stream trickled out. Finding a second and a third application equally unsuccessful,

I proceeded, after a few minutes, with the greatest difficulty, to ligature, in this deep hole, the bleeding artery. Shortly after another vessel, close to the last, sprung and gave out blood very freely too. I applied long pledgets of lint, steeped in a solution of perchloride of iron, forced into the part, and a second piece over it and the ligatured artery, and a third piece outside again, and kept up finger pressure for about an hour, when it stopped the bleeding altogether. During all this proceeding the patient was sitting up in the bed, well propped up with a bed-chair and pillows, so that her head, steadied by an attendant, could not recede or elude the force. Relays of pupils kept up this finger pressure, and at several times throughout the day I called to see her; and, lastly, at 10 o'clock at night—and still this assiduous finger pressure, and no return of the bleeding—occasionally warm milk was given to wet the mouth; pulse excellent, and heat well developed over the body; even the flap is well supplied; it is warm—it is swollen and glazed upon the cut margin; as yet it is raised, turned up upon the forehead, so as not to come in the way of, or interfere with, the assistant's hands in making the required pressure,

Nov. 14, 9, a.m.—No return of the bleeding, the pressure being sedulously kept up the entire night. The woman partook freely of wine and milk occasionally. Her pulse this morning was good, 115 in number, regular in beat, and with considerable volume; she slept well, and never did my vigilant assistants relax their best efforts. The flap was warm and well supplied. She took some boiled milk and an egg beaten up, and brandy. At 12 ordered wine freely, the pulse being inclined to flag; got six ounces between that and 3 o'clock. A pint of beef tea, and eight ounces of wine through the remainder of the day and night—directions being left, in case of pulse becoming weaker, to abundantly give stimulants, and beef tea, as much as the patient could be got to swallow; the pressure to be kept up unremittingly by the aid of a number of assistants; she was placed in a more direct sitting posture, and supported steadily.

Nov. 15th.—Had a good night; slept quietly, and took 10 ounces of wine, and abundance of nourishment. Up to this date, 11, a.m., the finger pressure, by relays of assistants, has been kept up (58 hours) and with a successful result. The pulse steady, rather bounding. She is able to speak distinctly, and her eyes are bright and intelligent. On this morning, the danger of hemorrhage appearing to have passed by, I proceeded to replace

and connect the flaps. The index finger of the left hand was passed into the mouth, and the superior flap everted, and its outer edges refreshed with a sharp bistoury; so in like manner the lower flap. The surfaces were then approximated, and a long line of *juxta-position*, from the angle of the mouth up to the temple, secured by wire suture, and by the twisted suture. The wire sutures were placed at short intervals throughout the upper two-thirds of the wound, while the lower third and fleshy part were supported, as in the first dressing after operation, by the twisted sutures. Though the flaps lay apart for days, yet, when refreshed and held approximated, in a short time they showed indications, by returning heat and pulsative throbbing, of being marvellously vitalized; so much for the efficient arterial supply from sundry sources. The plugs were left within, and undisturbed. During this severe ordeal wine was abundantly given; and, after the cheek hole was closed up, it was astonishing to see how well the creature swallowed. Ordered afterwards as much beef tea and chicken broth as could be taken, and eight ounces of wine in divided quantities. 3, p.m.—Going on most favourably; no restlessness; no distress complained of; sleeps quietly for 15 or 20 minutes, and then awakens for nourishment, either broth or wine. 10, p.m.—Continues to go on favourably; respiration quiet and steady; pulse soft, 100—it has lost its vibrating beat. To continue wine; broth at intervals throughout the night. An attendant to sit beside the bed, with a vigilant nurse.

Nov. 16th.—Had a good deal of sleep; pulse soft, and with considerable beat; respiration good; wound looks very well, admirably in contact; no undue heat; no swelling; no tension; no pain of any marked character. To have six ounces of wine through the day, and two pints of beef tea and chicken broth. 3, p.m.—Going on most favourably; no accession of pain or fever; she has slept quietly, and taken nourishment freely; anointed the wounds with oil, to soften the crusts of coagulated blood, &c. 10, p.m.—Calm in temper; circulation not excited; to have eight ounces of wine for the night, and beef tea and chicken broth as much as can be taken.

Nov. 17th, 9, a.m.—Slept quietly, awaking at intervals only, to take nourishment. Pulse 100, steady and soft. Speaks with strength, and her voice quite clear and natural. She took throughout the night the full quantity of wine, eight ounces, and two pints of beef tea. Changed into another bed so as to refresh her. The plugs remain still undisturbed in the chasm. Wine and broth to

be continued freely through the day. She is sustained in the sitting posture by the support of pillows and straps; calmly and quietly, thus securely steadied. 9, p.m.—Has taken the entire of the nourishment throughout the day most freely, and feels much the better for its sustenance.

Nov. 18th.—Continuing steadily to improve; plugs not interfered with; wound nearly united throughout. Wine and broth as on yesterday.

Nov. 22nd.—Removed the needles and cut out all the wire sutures. Union perfect and firm from one end to the other. On examining plugs found them still adherent, therefore let them remain. 10 ounces of wine.

Nov. 24th.—Plugs now loosened by free suppuration, so took them away; no bleeding after. Supported the entire cheek with long broad adhesive straps. On making traction on the ligature securing the internal maxillary artery, it came away without any trace of blood.

Jan. 20th.—The patient continued steadily to improve, taking abundant nourishment, both in the way of food and stimulants. The cheek is long since healed up, and the internal parts covered in with healthy repair. She is now up, and walking about; and it is astonishing how rapidly both strength and energy have returned. Four days later she left the hospital free from all annoyance and suffering; and it was most striking the little amount of disfigurement that followed upon so extensive and severe an operation.

To recapitulate the points of interest in this case:—1st. The magnitude of the operation; the intricacy of the dissection. 2nd. The cauterization of all the deep parts within, and from which the tumour was evulsed. 3rd. The ligaturing of the internal maxillary artery, and the application of digital compression 58 hours, for intermediary hemorrhage. 4th. The casting aside of the flaps from each other, and keeping them apart for two days and a-half; the refreshing of their edges, and their subsequent adhesion. 5th. The little amount of deformity after so violent and formidable an operation.

The rapid and alarming bleeding which occurred in this case suggests the propriety of my still further dwelling upon so hazardous a casualty. And, as I know no better monitor than stern experience, I shall detail another case where I had to remove the entire upper jaw for an osteo-sarcomatous tumour, and also to ligature the internal maxillary artery. From the violent rushes of

blood in those instances, and from other operations, and even dissections which I have made, it may be received as certain, that the artery does not always break up into the trivial little set of branches in which it is described to terminate:—

CASE IV.—Successful Excision of the Entire Upper Jaw and Palate Bone, for a Very Large Osteo-Sarcomatous Tumour; Ligature of the Internal Maxillary Artery; Rapid Recovery, with scarcely a Trace of Deformity.

Catherine Wade, aged 50, admitted to Mercer's Hospital, March, 1862, with a large osteo-sarcomatous tumour of the upper jaw. She stated that, 16 months before, very acute pain attacked "a lump which was in her jaw for a year and a-half." She perceived, about this time, a great change in the size of the tumour, which steadily increased. She lost two of her teeth, which became gradually loose, having suffered great pain for days in them, and shooting through the tumour; thus the growth progressed to the above date, when she came up from the country to me for operation. The following was her condition:—A large tumour, the size of a small orange, with prominence of the left maxillary bone, thrusting out the cheek, partially shutting up the eye, intruding on the nose, depressing the palate plate, forcing down the alveolar range, and making the mouth droop. The integuments were strained, tightened over the projection, yet but little discoloured. On lifting up the lip and drawing outwards the cheek the internal relations of the growth were fully revealed; the whole alveolar range was included, from the first incisor on the left side, to far behind the last molar, by the adventitious growth. The tumour extensively involved all the anterior wall of the antrum, it being thrust out, as it were with violence, by the growth within. So extensive was the force acting within the maxillary cavity that its floor, the hard palate plate, was depressed and forced down to fully an inch below its natural level. The whole surface of the tumour was irregular and uneven, save where it passed back upon the palate plate of the palate bone and soft palate. The tumour throughout its alveolar border was hard and resisting, while posteriorly and above it was elastic and crackling; on pressure it was painful throughout, partially so beneath the orbit, and even here there was a marked sensitiveness complained of. When handled from without, corresponding to this point, an additional elevation could be detected;

and immediately beneath the orbital ridge the floor of the orbit was encroached upon, thrown up, particularly along its anterior dense edge, and likewise the lid forced upwards with it, which, together with the upward development of the tumour, passed higher than the visual axis; the head resting horizontal. At this stage of the morbid growth all the teeth remaining, three in number, were quite loose, and blood flowed down freely from their sockets; they lay almost entirely concealed, buried in the abnormally-developed parts around. The colouration of the tumour was varied; of a deep purple reddish colour in its most prominent and elastic parts, and of a brighter red in its firmer and more dense constituents. During the incubation and development of this tumour, in its early stages, pain of a very severe nature characterized its changes—when projecting and prominent, pain was only sometimes present—often absent for days; in its latter state, now, pain not very severe.

On a careful examination of the tumour I determined on removing the entire upper jaw and palate bone; and on the morning of the 12th of March, 1862, did so according to the following method:—The woman was made to sit in a strong arm chair, and secured after the manner which I have already laid down, and with her head resting against the breast of an assistant. Standing in front of her, I passed a sheathed bistouri along the middle of the cheek, and having got its point as high up as possible I withdrew the sheath and transfixed the cheek, from within, close to the junction of the malar and maxillary bones, and cut it down to the angle of the mouth. I at once ligatured the facial artery in the lower flap, and then prolonged, with a scalpel over the malar bone, the incision of the soft parts; and next freed the cheek from the tumour up to the edge of the orbit, all the way from without inwards, and then divided the upper lip, in the mesial line, into the nostril, and likewise lifted it up, together with the ala of the nose, from its attachment to the maxillary bone. The soft parts were most freely stripped up, and the bone, with its morbid production, throughout its entire extent brought into view. With a fine Luer's saw I notched deeply the junction between the malar and superior maxillary bones, and then, with a strong forceps, completed their separation. One blade of the forceps was next passed into the left nostril, and the other into the mouth; with one stroke of the instrument the hard and soft palates were cleft throughout. I next clipped across the ascending nasal process of the superior maxilla, close to its junction with the frontal,

and then seized the tumour in the grip of a large claw-forceps and pressed it down. The part gradually yielded with a few touches of the blade of a scalpel; the eye and the parts upon which it rested were let free from the orbital plate, and then the bone and tumour forced down into the mouth. The entire mass was then twisted upon itself so as to lacerate, if possible, the supplying vessels from behind. Some adherent shreds required liberation by the knife; and then all was most satisfactorily taken away. The eye was not in the least disturbed from its position, and the cavity from which the tumour and jaw were taken, though startling to look upon, yet was most healthy throughout. Some brandy was administered, and time given for the patient to rest; in a few minutes a very large artery burst out furiously—blood rapidly flowed from the mouth. At once search was made—and, on pressing back into the deepest angle of the mouth, I could discern a large vessel copiously ejecting blood. This, from its position, was the trunk of the internal maxillary artery; with a very curved tenaculum, stout in its point, I seized the vessel, having failed with spring forceps and toothed forceps to do so; and now throwing a noosed silk ligature over the handle of the tenaculum, I caught it in a long forceps and passed it along to the extremity of the instrument, where it held the artery, and with the forceps lifted the noose over the sharp point of the instrument. Thus the artery had a cast of the silken ligature fairly round it; the difficulty which now offered was to efficiently squeeze the knot, so as to divide the internal coats of the vessel, and permanently secure it; however, by rapidly following in the instrument with the index fingers of my right and left hands, the ends of the ligature being held tense over each, the tie upon the vessel was well secured; the second knot was as readily, and more easily, accomplished; the tenaculum was then cautiously withdrawn, and the ligature brought out through the wound and guarded on the cheek; the surrounding parts were all seared with the hot iron as a prevention against unhealthy inflammation being set up, or languid inflammation, almost as subversive of quick vitalizing repair; pieces of sponge and pieces of lint, with ligatures of reserve, were pressed into the deepest parts, the ligatures being brought out through the superior angle of the wound at the malar bone, and fastened with adhesive plaster on the temple. I next brought the vertical incision in the lip together with two hare-lip needles, and the longitudinal wound in the cheek accurately in contact by eight points of the silver wire suture. When all this dressing was accomplished, it

was truly astonishing how little deformity remained. The patient was then conveyed to bed—having partaken freely of a long draught of warm beef tea, and after it some wine, and taken 30 drops of Battley.

9 p.m.—Has had a quiet day and a good deal of sleep after; I found her, at this hour, free from pain and cheerful; 20 drops of Battley.

13th.—She has had an excellent night; reaction sufficient; not too much; no developed fever; pulse quiet; no pain; wine, six ounces, with cold water; cold beef tea.

14th.—Has had an admirable night; no pain; slept quietly; pulse only 86; has taken nourishment very freely. The wound looks most favourable; to have four ounces of wine by day, the same at night, and beef tea three times in the 24 hours.

18th.—Progressing most favourably in every respect. I removed, to-day, the pieces of sponge and lint, having first gently injected a stream of tepid water around them, and by such proceeding loosened their adherence, and permitted readily their being taken away without any renewal of bleeding.

20th.—Removed the needles from the lip, they lay there so long quietly, there being no strain upon them. So accurate was the line of union that it could scarcely be perceived; cut out all the silver sutures likewise, except two near the angle of the mouth, which I suffered to remain to support the more massive flaps; the interior of the mouth looks admirably.

26th.—Removed the remaining stitches. On the 26th it would be impossible, at a little distance, to know that any operation had been performed; and the eye has regained its motions, and the lids their power of adaptation to sleep or watchfulness. The patient is now out of bed, and walking about the ward.

The recovery of this woman was most remarkably rapid; in three weeks she was perfectly well; there was scarcely a trace of deformity externally. Where the knife had traversed through the cheek its course was traced not thicker than a thread, and where the lip was vertically severed it was difficult to discover; again, the eye was restored to its normal position, it lay on a plain horizontal with the other; its functions were recovered, as now its axis was correct. The retina had never been infringed upon by structural change. So now, all obstacles being removed, the transmitted impressions were at once appreciated and sight restored. At no distant period it is my purpose to detail several cases of excisions of portions of the

upper and lower jaws for cystic and benign tumours, without cutting the cheek at all, in some of which I have sawed large portions of the alveolar range, cutting away all beneath; in others removing the external wall of the bone pressed out and deformed, and gouging away the lining membrane and all within. Again, portions of the alveolar range, by vertical incisions through a part of the depth of the bone, one before, the other behind the part implicated in disease, and connecting both by a horizontal section with a fine saw—or what is better, a bent or curved-bladed forceps; thus, when exemplified in the lower jaw, leaving its under compact part in security, and so preserving the perfect outline of the lower part of the face. However, as I have just said, I trust, at no distant period, to be more explicit in this most interesting part of surgery.

CASE V.—*A most Unusual and Hideous Form of Double Hare-lip, Complicated with Double-fissured Palate; Enormously Developed Septum, and Intermaxillary Projection, all Fused into a Shapeless Mass; Operation; Recovery, with scarcely any Deformity.*

In the pages of this Journal will be found two papers of mine on the operative measures necessary in the treatment of hare-lip—the first published in February, 1856, the second in May, 1860. In each of these communications numerous cases of the most complicated forms have been described and figured, in which I had most successfully operated. These shocking instances of deformity were selected from amongst many, owing to the difficulties which surrounded them in reference to operation. Since the above period I have operated upon many, many cases, both in private and hospital practice, bearing a close resemblance to them, and with an equally satisfactory issue. To cases such as these I shall not again refer, though I could extend the catalogue of them in a most remarkable way—all, however, confirming the accuracy and practical value of every deduction I arrived at, and every precept which I laid down. The following case, however, from the magnitude of its deformity, is well entitled to ardent consideration, as affording a fine example of what may be accomplished, even under the most unpromising circumstances:—

James Ferguson, aged two years and seven months, admitted to Mercer's Hospital, January, 1863, with terrible deformity of the mouth. The mother was rather handsome, without the least trace

of irregularity in the symmetry of the face—without the least deviation from normal arrangement in the alveolar arch or expanse of the palatine dome, or irregularity even in the setting of the teeth. So, likewise, the father has been reported well-looking, and free from deformity of any kind. Neither of the parents had any one immediately connected with them, that they could remember, marked in this way. The little patient was the third child; the other two were handsome and well formed. The mother did not remember being frightened, or cannot account for any mental impression producing terror. Words can but feebly describe the revolting aspect of the child; but I shall endeavour, with all accuracy, to describe the departures from a normal condition to the extravagant malformation exemplified in this stricken creature.

The maxillary bones, on either side, were scarcely at all developed in front, and the anterior margin of each was, as it were, suddenly pinched inwards; small angular little teeth studded these rounded and retiring portions. The palate plates were scarcely even marked; a thin semilunar rim of bone projected slightly inwards from the ill-formed alveolar range, like a narrow little shelf; and this, on either side, constituted the only attempt at separation between the cavity of the mouth and that of the nose. As the superior maxillæ were separated in front by fully three-quarters of an inch, so, likewise, the imperfectly developed palate plates, in their semicircular sweep outwards, left fully the same extent of space between their inner or concave margin and the inferior firm edge of the pendulous vomer. Thus, then, there was this wide-spread double fissure of the hard palate, and an absence altogether of the palate plates of the palate bones. So, too, the soft palate was never formed; there were no little pendulous flaps of it drooping on either side, as so frequently observed in ordinary cases of double hare-lip and fissured palate. The altogether unnatural construction of the vomer, as we shall presently see, created another remarkable feature in the double cleft of the palate, for this bone, so smooth, so even, so thin and extensive in its normal condition—playing so important a part in the partitioning of the several cavities hereabouts, and, by its steady support, imparting symmetry and beauty to the nose—had another attitude and aspect stamped upon it by the vicious development imparted to its growth. The bone did not descend so vertically behind as it ought to have done; it was cut off, as it were, from above, downwards and forwards. This absence of its posterior part permitted the sulci, formed

between it and the deficient palate plate, on either side in front, to communicate behind, and form an extensive chasm, revealing the entire pharynx to its highest cranial attachment. Again, in bulk and volume, the bone was so materially changed, as almost to obliterate its characteristics altogether. Throughout, from its highest margin, where it was inordinately thickened, it gradually increased in bulk and descended (its line of descent was about correct, probably a few lines lower than it ought to be); but the lower edge of the bone had gradually attained more than a quarter of an inch in thickness—this, at least, at its most posterior part; and still more gradually forwards, truncated all along until implanted into the inordinately developed intermaxillary bones. And now I shall speak of the hypertrophied mass composing the central osseous projection. I have met with, described, and written about many rare, curious, and remarkable configurations—freaks of nature—exemplified in the evil proportions of this central prominent bony piece; but I have never seen, in any instance, so wide, so deep, so prominent a piece; so dense and firm in its structure, so unyielding, fixed, and rigid in its position. The lower end of the vomer was expanded, osseous material, inordinately superadded—dense throughout, contributing materially to the width and depth of the intermaxillary bones, all now fused together—the entire projecting piece standing almost straight forward, far beyond the tip of the nose. An idea of its size may be more readily realized by its measurement: it was nearly an inch across; three-quarters of an inch in thickness or in depth; and in length, from where the vomer began to decidedly contribute in its formation, fully an inch. A part of this mass was composed of partially hypertrophied gum, dense and unyielding as cartilage; small teeth, in earlier days, had been in it, but now had been shed. The mucous membrane covering it was highly vascular, while that covering the vomer was of a brilliant scarlet colour, tinged with blood, traversed everywhere with minute arterial vascularity—ramiform injection of vessels, so minute as to be only revealed by the aid of a lens, yet so abundantly crowded, massed, when taken as a whole, giving the appearance of a continuous vermillion colouration of the entire surface. Attributable to the extensive open cavity in front, admitting, according to greater or less exposure, the cold or damp air, is the highly vascular condition of the mucous membrane, which also prevails throughout the entire nose, palatine regions and fauces.



PLATE IV

Fig. 1



Fig. 2



M^{rs} BUTCHER'S CASES OF BARE LIP

Fig. 1



Fig. 2





I pass along now to the description of the soft parts conjoint with this condition of the bones which I have endeavoured to describe (See Plate IV. and V., Fig. 1, front and side views of the patient), and which, from their unparalleled irregularity, contributed materially in adding to and likewise revealing the hideous aspect of the child. The alæ of the nose were widely expanded, dragged outwards, fastened tightly, tensely, down to the turned in anterior margins of the maxillary bones, while the tip of the organ was everted, dragged upwards and forwards, matted into the fibrous structure of the protruded osseous mass in front. The great elevation of this part gave the appearance as if the nose was broken across in the centre; pendent from the very tip of the nose, and standing still more prominently forward, was a rounded piece of integument not larger than a sixpenny piece, and likewise adherent to the upper surface of the projecting osseous part; it was thin in its construction, and margined with mucous membrane. The alæ of the nose, as I have mentioned, from their connexions, were dragged so directly outwards as to bridge over by a straight line the dark sulci that intervened between the insertion of the vomer into the protruded central solid mass and the non-developed anterior edge of the maxillary bone on either side. From the depressed point of bone to which the ala was attached, so likewise here was the corresponding half of the malformed lip tied tightly down. The right and left portions seemed to correspond in form, in curtailed volume. Each portion, from its constriction above, where its material was very different, suddenly became protuberant, everted, and sharply receded, passing almost vertically to meet the lower lip, and at their junction completing nearly a right angle, instead of lying in juxta-position. From this it will be seen how small the lateral portions were, or, in other words, how withered in their development. When this creature made the effort to swallow, the greater portion of both solids and fluids were projected by the tongue through the cleft in front, owing to its unusual and over-demanded exertion to collect and force back the nutriment. I have before noticed and directed attention to the fact of the unusual development of the organs in cases of somewhat an analogous amount of deformity, tending greatly to the difficulties of the early management of the case after operation, owing to the confined limits imposed upon its volume and its movements. The condition of the child was altogether most hideous and pitiable (See Plate IV. and V., Fig. 1.) On Saturday, January 31st, I operated upon the child

according to the following description:—I need scarcely say it required much thought and consideration to plan the various steps of so complicated a piece of business; and I may here add, as a word of caution and admonition, this rule, which I would thus write, to enforce careful thoughtfulness for every emergency:—*He who first operates has the entire of the deformed parts in their fullest development, such as they have been created—soft parts, corrugated and diminished in proportions; yet they are elastic, extensible, and permit of separation, of traction, to a vast extent. In this early state, by free and extensive dissection, abundant material can be borrowed from the cheeks and sides of the face to cover in the faulty gap in front, while the irregularly developed maxillæ the protruding intermaxillary bones, the abnormal septum, may all be pared down, split up, thinned; portions removed; spaces cut out, defined in form, for the reception of distorted, thrust-out parts; to be held in unity by wire sutures, by needles, until steadied together by a new and living bond, permanent for ever.*

Should these early efforts of the operation fail, attempts made after seldom prove so satisfactory, and for these simple reasons:—Much has been taken away, the soft parts that remain which refused the union; from the cutting, from the piercing, from the nonextensibility consequent upon the reparative process, efficient to heal, is very imperfectly conditioned to endure an increased amount of traction, that which must be enforced, so as to bring surface to surface, and offer even the chance of union.

These secondary operations, as I have well determined from repeated examples, require more skill, more tact, more delicacy, at the same time boldness of manipulation, to accomplish all that is demanded and required, than any primary case can possibly do. Hence the deep stress which I lay upon the responsibilities which devolve upon the surgeon who first undertakes to meddle with and endeavours to rectify those bad cases of hideous deformity consequent on arrest of development. I shall now proceed to detail the operative proceedings, which, after due reflection, I considered most applicable in this frightful case. On the morning of the operation the child had been abundantly fed on two occasions, so as to do away with the necessity of giving food for some hours. The little fellow was rolled in a sheet, not too tightly, merely so as to retain the arms, but not in the least to interfere with the ingress and egress of air to and from the chest in lusty crying; thus he was placed in the nurses arms, who sat upon a strong chair, with his

head resting upon her left shoulder, the chair being elevated to a convenient height. I commenced in this way:—I first struck a tenaculum into the central fleshy part, lifting it upwards, and making it tense at the same time; then sweeping the knife rapidly beneath, dissected it up to its attachment from the tip of the nose. I guardedly preserved every atom of it by semilunar strokes of the knife, by which method the curved and matted-down borders were not infringed upon, whilst the osseous projection was fairly exposed. The tenaculum was then disengaged from this soft portion, and it was not meddled with further in this stage of the dissection. I next proceeded to deal with the projecting osseous piece. All its features, and characters, and intimacy with the vomer being thoughtfully considered, duly weighed; the soft tegumentary piece being guardedly drawn up by an assistant, I cut, with a small-bladed, sharp bone forceps (constructed, by order, for me, and most efficient for such purposes), the vomer, where quickly expanding for fusion into this morbid development, almost directly backwards, there being but very slight inclination upwards, to the depth of about three-quarters of an inch; the blades of the forceps were then placed on either side of the projecting piece, and a thick slice removed from its anterior surface, the two incisions meeting above at nearly a right angle; thus a very large portion was taken away. Though this proceeding was more rapidly executed than the time taken for its description, the bleeding was most alarming. A very large vessel, nearly the size of the radial artery, nourished this unnatural development; and when it was divided the blood shot out vigorously in a rapid current. However I had anticipated, from antecedent cases, the likelihood of such an occurrence, and was prepared for it with the actual cautery. A fine-pointed instrument, heated to its full temperature, was resting in the furnace; quickly it was thrust into the divided bone after the retracted artery, and efficiently it fulfilled its duty on a second repetition. Hemorrhage stayed, I proceeded still further to prepare this piece to fill up the space between the imperfectly developed maxillary bones, and so to afford an even support to the upper lip when restored. The forceps was next applied behind the projecting piece, and made, by two incisions, to cut a triangular piece out of the vomer, the apex above, the base inferiorly. My own forceps for dividing the stalk (figured in the *Dublin Quarterly Journal*, May, 1860) was next laid on, and the compact osseous bar clipped, while the less dense and soft parts on either side of the stalk were spared, the vascular supply

descending to the piece, essential to be preserved, not interfered with, and thus its life secured.

The various cuttings just detailed rendered this piece most amenable to management—the taking away of the large portion in front, removed for ever what was obnoxious there, the peculiar angle cut out behind, and the clipping of the dense stalk in the centre, nearly through its entire depth—allowed the preserved piece to be forced back, most gently, without risk of its vital supply; and when the lateral borders of it were pared, and the marginal gum on the maxillary bones refreshed, it was astonishing how well this extensively pared dense piece rested in the recess. So accurately were all these details carried out, effected, there was no tendency or disposition of the piece to start forward; and, from the evenness of the cuttings, there were no sharp edges or irregularities anywhere. The solid parts being constructed, I again returned to the central soft piece, and seized it with a tenaculum, at its point, and cut it with straight scissors into a perfect V shape, preserving it to its very lowest point. The left portion of the lip was then seized with the tenaculum, just external to its curve, and lifted upwards and outwards, while the scalpel was carried beneath it, cutting extensively, widely, the mucous membrane, and freeing fully the expanded and pinned-down ala. This being all set free, liberated, the knife was still carried outwards, detaching the cheek, and thus creating that sufficient laxity—whereby an approximation of the parts might be secured—that more constrained relaxation favourable to union; the right portion of the lip and corresponding ala of the nose and cheek, were treated after a similar manner. Such being efficiently done, the curved scissors, preferred by me in such cases, was applied, first upon the left side, being laid on at the red border, just external to the point where the tenaculum was inserted; this portion of the lip being stretched and made steady, on the instrument being quickly, energetically closed, the separation of the rounded border was accomplished to its highest part into the nostril, at its point of attachment with the ala. The right portion of the lip was treated in every particular in a similar way. During these steps of the operation scarcely a drop of blood was lost, so carefully was pressure made on both facial arteries. Next came the important stage of the operation—the arrangement of all the cut parts, and the adaptation of all the divided surfaces. The needles which I used for this adjustment were such as I have figured and approved of in my essays on the operative measures necessary in the

treatment of hare-lip—the long, slender, steel needle. The first of these was passed from left to right, its entrance the fourth of an inch external to, and above the left ala; being thrust towards the right, it was made to transfix, a little above the apex, the triangular piece formed out for the septum of the nose; and being still further pressed on, the needle made its appearance at the same distance from the right ala, and at the same height from its under margin, as where it entered on the left side; thus, when the transfixion of the several parts was accomplished, the needle lay on a perfectly horizontal plane. It must be remembered here that the points of entrance and exit of the needle were so planned at such a height above the low margins of the alæ, that when it traversed the central triangular piece, it held it well up to the cut surface of the vomer in front, so as to establish a permanent union. By direction, then, the cheeks were well forced forwards, and I threw a thick silken waxed ligature across the needle, in the figure of eight form. From the decision with which I had the cheeks held forward the parts glided gently together towards the centre of the needle, to which parts they were compressed, and the ligature was made steadily to follow them, *not to drag them together*, but simply to prevent their retraction and separation—their again receding. The cord was thrown several times from side to side, so as to perfect the twisted suture. It was very apparent now how admirably the septum had been formed. The second needle was next introduced, fully three-quarters of an inch away from the edge of the cut surface, and made to enter at the junction of the red border of the lip and integument on the left side; with a steady pressure it was forced from left to right, deep through the lip, cautiously in a horizontal line, so as to strike the right or opposite half, critically in the same position, so as to make its appearance at the same distance from the red border, and guard against any unevenness or notch below. A strong waxed silk ligature was also thrown, in the figure of eight form, round this needle, the same precautions as taken with the first needle being adopted, of forcing forwards the soft parts to absolute contact, before the cord was cast around; several turns of it were made in the evenest way, and the adjustment could not be more perfect. Owing to the elliptical incisions created by the curved scissors, and the remote ends of the double elipsis being brought together, a slight oval space intervened between the upper and lower needles; in the upper part of this the apex of the central fleshy piece forming the septum

lay. I introduced a third needle, finer than the other two, midway between both, on a line with the other two, at the point of entrance and exit and depth throughout from the surface. A separate ligature was likewise thrown around it, in the figure of eight form, and the same pressure from behind forwards afforded to the soft parts, as in their application. When the ligature was applied the concave margins entirely disappeared; surface lay to surface in a vertical line, and, as a consequence, the inferior margin of the lip was rendered slightly prominent, the object aimed at by such a division and adaptation of curves. The ends of the needles were next clipped off with an ordinary wire nippers; thus the needles were inserted, thus the ligatures were applied, each needle having its separate cord. That reprehensible practice of passing the ligature from one needle to the next, and so on, I need scarcely say was not employed by me. It is a proceeding which warrants my deepest censure. Such a mode of application tends to approximate the needles, and so, in proportion to the tension employed, to shorten the cicatrix, or, in other words, to contract it in its vertical axis and increase the predisposition to notching at the red border; whereas the separate ligature thrown around each needle, flatly and evenly laid on, tends to press gently down the lip, and lengthen—increase its vertical measurement, and likewise to assist the evenly-adjusted curvilinear incisions in perfecting the union, and rendering prominent the inferior part of the wound and red border of the lip. During all this manipulation the cheeks were pressed steadily forwards, so as effectually to guard against any sudden jerk or additional violence, upon the constrained parts. Long since, in those cases, I have put aside the use of spring apparatus, from the difficulties I encountered in their steady application and adjustment to the heads of infants—owing to the facility with which they were put astray, and to their likelihood to do mischief; again, from the readiness with which they went out of order, and so lost their charm. The method which I have been adopting latterly, and which I find perfectly efficient in taking the place of the assistant's hands, in holding the parts forward, relaxing the cheeks, and grip upon the needles, is the application of adhesive straps, cut, figured, and applied after this manner:—Two pieces should be cut about an inch and a-half wide, and each long enough to reach from the summit of the forehead to beneath the chin, taking a semicircular course behind the cheek. The edge of the strap, which is to be anterior when applied, should be cut in a semicircular shape to the

extent of the cheek, the centre or deepest portion being somewhat more than half-an-inch. One end of the strap should be fastened on the upper and fore part of the forehead, then brought in a curved manner outside or behind the cheek, and then carried, with moderate traction, forwards beneath the chin. The second strap should be applied, after a similar fashion, on the opposite side. If the plaster be good and adhesive it never slips, the broad ends take a firm unyielding grip, and the straight edge of the plaster behind, made tense by the traction forwards, offers a direct opposition to the recession of the cheek, while the curved anterior margin permits the strap thus put on to lie more evenly, and so accommodate itself to the prominence of the cheek thus forced forwards. In the case under consideration, and in which the strain upon the adjusted parts was extreme, this practice fulfilled every indication that the most perfect appliance could bestow. The operation and dressing being now finished, I was well satisfied with the appearance of the child. Not a drop of blood oozed from the parts, and he was well resuscitated by a few tea-spoonfuls of wine and water.

9, p.m.—The child was wonderfully well; he had taken milk freely several times. In five hours after the operation, the child being quite clear from the effect of the chloroform, and having perfectly recovered from the shock, as evidenced by reaction, I had, as my usual custom, small doses of laudanum, at intervals of three or four hours, administered, so as partially to narcotize the child. Previous to each additional dose the infant was freely fed, and quickly calmed again to repose. On the morning following the operation, February the 1st, nothing could be more satisfactory than the condition of the little patient; he had calm, quiet, steady respiration, an excellent pulse, well arterialized blood; he had consumed a large quantity of milk; pain was averted, and undisturbed sleep was enjoyed, from the sedative influence of the narcotic. Here, again, I would wish to urge the propriety of administering opium to children after painful and serious operations. *Children bear opium in proportion to their years, I would say, even better than adults.*

I fear this axiom will startle some; but, as all other propositions in these reports, I offer it, too, with all truthfulness as the result of my own experience. In my Memoirs on Hare-lip the same mode of procedure has been inculcated—advocated; and in numbers of cases occurring in my practice, since the last was published, its superiority has been confirmed; and so likewise after the

embarrassing operation that I am describing. Everything went on most admirably, until the evening of the third day, when erysipelas attacked the parts. The child was listless for some hours before, and refused his food; soon the blush of inflammation showed itself about the wound, external to the needles; the nose was swelled; the eyes were puffed. At once a brisk mercurial aperient was given; wine, with water, was occasionally taken. On the following morning (February 4th), and the fourth day after operation, the erysipelas had made considerable progress; the child had scarcely any sleep; he was tossing and restless all the night; the lip and cheeks were more swollen, more brilliant in colour; the eyes were more shut up; the forehead was involved slightly—œdematous, painful to the touch, and discoloured; pulse small, feeble. All the swollen parts and parts engaged were now smeared with the strong mercurial ointment—a drachm being applied morning, mid-day, and at night; and sherry wine was ordered in what may be considered large doses for an infant at this tender age; four ounces were consumed in the 12 hours; this treatment was continued steadily—perseveringly, for two days (February 6th), before the inflammation began to subside. Then the application of the mercurial ointment was suspended, and all on, removed with sponge and warm water. Still the wine was continued, and strong chicken broth, which the child partook most freely of, as well as of milk in abundance.

February 7th.—A remarkable diminution in the swelling; all redness dispersed: the eyes bright and intelligent, and the œdema of the lids gone; yet the skin branny—scaly everywhere, upon the recent track where this erysipelatous inflammation travelled; fortunately no depots followed; the suppurative crisis had been arrested everywhere; the child took now his food with eager anxiety, and the peevish restlessness of the creature was altogether subdued. Now came the question as to the removal of the needles. In my opinion their presence was not the exciting cause of the erysipelas at all. I attributed its origin to the necessary violence inflicted on the deeper parts; from the admirable way in which the cheeks were relaxed there was but little strain upon the needles; and, from their fine slender proportions, they were sources of but little irritation or annoyance to the parts, which they so delicately held together. In my former writings I have laid down the most suitable time for the removal of the needles at 96 hours after the operation, and invariably got perfect union by such a mode of practice. In the instance I am now relating, I did not take them away until the seventh

morning after the operation (168 hours). As I have just mentioned, the parts were so relaxed, so free altogether from restraint or tension, it was clear the needles were doing no harm there, and there was no chance of their cutting their way out and occasioning unsightly gashes; nay, I looked upon their presence, as lying in this most favourable aspect, as a great advantage and protection in support, in case the unhealthy inflammation had interrupted the adhesive bond or union of the divided surfaces, or occasioned—brought about their separation afterwards. Now, however, that all unhealthy inflammation had long since departed, I removed the needles with the greatest caution, an assistant all the time steadyng the head and maintaining the cheeks well pressed forwards. On the parts being revealed, it was a pleasing thing to see union effected throughout; the septal piece was perfect, adherent to the bone; the angle of it was evenly caught between the lateral portions of the lip above, and united beautifully there; while the remaining portion of the lip was perfectly formed, and united to the lowest point of its red border; while not the least remarkable part of the change wrought in the features of this little creature was the perfectly raised and symmetrical form and position of the nose. Adhesive straps, broad at their ends, narrowed toward the centre, were applied, so as to sustain the parts and maintain forwards, with steady support, the cheeks; while the lateral straps from the forehead round the cheeks to beneath the chin were applied in the manner already described. Such was the mode of dressing employed for about 10 days, without a single untoward circumstance to arrest the progress to perfect recovery. At the end of this time it was most marvellous to see the changed aspect of the child. At a little distance it was almost impossible to discover that the little fellow had been subjected to operation at all; and on closer scrutiny the adaptation of parts was so accurate, and the union so perfected throughout, that only faintly marked lines of junction testified to all that had been done. On examining the mouth, nothing could be better than the way in which the partially preserved central piece lay; it shut up all the hideous gap between the maxillæ, and its lateral edges lay in contact with, and united immovably to each, whilst its lower edge ranged with the alveolar arch and perfected the palate in front, at the same time that its anterior surface sustained the united lip in its now full integrity and proportion. The condition of the child, before and after operation, is most accurately represented in plates No. III. and IV., Figs. 1 and 2, from drawings

beautifully executed by Mr. Thomson. From first to last the history of this case is interesting in the extreme; presenting difficulties and complications of unusual magnitude, yet successfully overcome by thoughtful consideration, gentleness, promptitude, and decision. In the after treatment of this child there is one point that I must again lay stress upon. I say, again; because in my essays on this operation the value of the practice did not escape me. I dwelt upon, and illustrated by cases, the great efficacy of the administration of opium so as partially to narcotize the child. To the exhibition of the drug—the extension of the practice in this most embarrassing case—may be, I think, in a great measure, attributed the successful issue of the operation.

I contend for, and am satisfied, that the parts were all evenly cut—most accurately adjusted; gently, lightly, steadily in contact; yet it was essential, for security of union, that no irritation should be set up—no dragging or tension on the needles; in other words, that the child should be calmed down, no restlessness, no crying, no struggles. This was all brought about, all done, by the exhibition of opium. And as the shedding of the lymph, its plastic exudation, its organization, was not interfered with or interrupted, union, healthy junction, followed in a few hours, and was perfected previous to the terrible complication, erysipelas, setting in. Reasoning from analogy, it may be inferred, had not healthy adhesion, even union, been quickly effected, the supervention of this destructive inflammation would have marred all prospects of success, and caused the operation to be a perfect failure. Whereas, now the case stands prominently forward as a good example of what can be effected by operative surgery in removing distress and rectifying hideous deformity.

